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QUARTERLY REPORT ON OPHTHALMOLOGY AND OTOTOLOGY.

No. VI.

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7. Thomson's instrument for the detection of color-blindness consists of two flat sticks, about two feet in length and one inch in width, fastened by a hinge at one end and connected together by a button at the other. Between these, and concealed from view, are forty white buttons, having the figures from 1 to 40 engraved upon them, attached to the stick by small wire hooks. To the eyes of these buttons are attached

forty skeins of colored wool. The test-skeins are three: light-green, rose or purple, and red. These skeins are shown to the persons examined in turn, and they are directed to select from the stick the colors which will match them. On the stick the colors are arranged alternately to match the tests, and to be of those confusion-tints which experience shows to be most commonly selected by the color-blind.

15. Just contributes a short article to the *statistics of myopia*, the result of an examination of the eyes of 1,229 scholars in the two high schools of Zittau, in both of which the hygienic conditions of light, space, and arrangements of furniture leave nothing to be desired. He found that myopia was as frequent in the new schools of Zittau as in other educational institutions of the same kind, and hence he concludes that it does not chiefly result from insufficient illumination of the school-rooms, but rather from the great and ever-increasing demands on the industry of the pupils at home, forcing prolonged labor on their eyes during the evening hours, frequently by insufficient artificial light.

26. Nicati describes a case of what he calls true *distichiasis*, in which the hairs grew from the ducts of the Meibomian glands. The case was a very complete one, the rows of hairs extending from one end of all four lids to the other, and emerging regularly from the orifices of the ducts of the Meibomian glands. From a pathogenetic standpoint, the presence of these hairs is another proof that these glands partake of the nature of sebaceous follicles. The radical treatment would be by the galvanic-cautery needle or excision. He recommends the following operation: he makes a vertical incision with a cataract-knife throughout the whole length of the lid, immediately behind the faulty cilia and parallel to the conjunctiva, so as to detach the tarsus from the conjunctiva, which incision should be two millimetres deep. Parallel to this, but immediately in front of the cilia, he makes a second incision of the same length and depth. Then with scissors he extirpates this circumscribed portion with the hairs.

29. Wolfe has a short paper upon his new method of performing *plastic operations upon the eyelids*. He defines his operation as one distinct from the skin-grafting process of Reverdin, and from that known as cuticle-scraping. It consists in the transference of skin flaps, cut to shape from any part of the patient's body to supply deficiencies elsewhere. His dressing consists of dry lint, though he thinks Martin's recommendation of hot dressing a decided improvement; and he has also gradually been reconciled to the use of very fine sutures. He does not employ antiseptic dressing, because he considers it desirable to keep the cuticle from peeling

off, and thinks the carbolyzed applications have a tendency to lead to its detachment.

30, 31. Mathewson reports two cases of *ectropion treated successfully by Wolfe's method of transplantation of skin flaps without pedicle*. In the first case, operated upon by himself, the transported skin flap was taken from the left side over the seventh rib, was elliptical in shape, and measured three inches in length by one and a half in breadth. In the second case, the flap was removed from the inner surface of the upper arm, and measured 2·6 inches in length by 1·7 in breadth. Dr. Howe also reports a successful case. The patient was a young woman who had complete eversion of the right upper lid and dense cicatrization of the skin of the forehead, the result of a burn in childhood. The piece of skin was taken from the inner aspect of the right forearm, and measured 3½ inches in length by 1½ in breadth. Three months later the effect was excellent, though the movements of the lid were, of course, restricted.

40. Raehlmann's paper upon *amyloid degeneration of the conjunctiva* is based mainly upon two cases of his own. Both of these cases showed that amyloid degeneration here is entirely independent of conjunctival trachoma. Both also showed the possibility of a retrograde metamorphosis of the amyloid degeneration after partial extirpation. Raehlmann thinks that real amyloid formation in the conjunctiva is always preceded by a stage of hyaline degeneration; that amyloid formation in tumors must always be regarded as something accidental, for it only appears in the advanced stages of neoplastic formation, and then generally secondarily; and, finally, that the tumors here under consideration are entirely independent of trachoma both in their origin and in their course. They may degenerate and entirely disappear after partial extirpation. Their structure resembles that of lymphoid tumors. They may undergo hyaline degeneration throughout a greater or less extent without any amyloid substance being demonstrable in their structure.

41. Rampoldi reports a very *singular circulatory phenomenon in the cornea*, of idiopathic origin. The patient was a girl æt. 17, who was first seen in October, 1880. She had always been perfectly healthy, except for an attack of

typhoid fever in 1879. A few days before she applied for help she noticed that whenever she bent her head over her work the left eye gradually became clouded, as if there were a white veil before it, which condition disappeared in a few minutes after her head was raised. The difficulty of vision returned with every prolonged inclination of the head. An examination in the upright position of the head showed slight protrusion of the left eye, with, however, no limitation of motion; slight chemosis of the ocular conjunctiva downward, but nothing abnormal in the cornea. After her head had been inclined for twenty minutes, vision became obscured, and an examination then showed a milk-white spot at the center of the cornea, located in the anterior layers, of about the size of the pupil. Gradually, as the head remained erect, this faded away, demonstrating that the cloudiness was in the lymphatic channels; and it faded away toward the subconjunctival lymphatic space. After a month's duration the phenomenon ceased to appear.

51. Galezowski recommends *synechotomy for adherent leucoma*. He has employed this operation in cases of more or less limited anterior synechia of traumatic origin; in cases of anterior synechia developed in consequence of an operation for keratoconus; and in cases of partial adherent staphyloma of the cornea. He makes use of a needle with a cutting edge, shaped like a pruning-knife, or of a short synechotome made for the purpose. He punctures the cornea at the side opposite to the synechia, and a little above the horizontal diameter of the leucoma, directing the point of the instrument between the iris and the cornea, with the edge toward the synechia. Then, by repeated saw-like movements, the iris is cut loose from the cornea. By thus detaching the iris from the cornea, it is believed that glaucomatous accidents are prevented, and at the same time the staphyloma and the astigmatism are cured.

53. In his paper upon *the neuropathological significance of the width of the pupil*, Raehlmann considers his subject under three heads: I, The reaction to light; II, Reaction to movements of convergence; III, Reaction to conditions of innervation of the sympathetic. 1st. If the illuminated pupil does not react to light, while the other pupil

does, though not illuminated, the first optic nerve still retains its conducting power, and the failure of the pupil to react is due to unilateral paralysis of the pupillary branch of the corresponding oculo-motorius, or to some affection of the iris. 2d. If the pupils react to light, in spite of complete blindness, the cause of the latter is beyond the corpora quadrigemina. 3d. If both pupils react during convergence, both motor oculi nerves perform their function as regards the pupil. 4th. If both pupils fail to react to light, either directly or sympathetically, while they contract during the act of convergence, and if there is a certain amount of vision in one or both eyes, there is some obstruction to conduction in the fibers between the nucleus of the oculo-motorius and the tubercula quadrigemina. 5th. In physically weak, nervous persons and in maniacal patients, very wide pupils are so often observed that narrow pupils are regarded as an ominous symptom of approaching paralysis. A rhythmical change in the pupils is also observed in these cases, independent of the influx of light or of the act of convergence. 6th. Narrow pupils are peculiar to all diseases which cause a diminution of the cortical function, especially paralytic dementia. 7th. Myosis is especially frequent in diseases of the spinal cord and medulla oblongata: in tabes the narrow pupil is immovable to light, but reacts to the act of convergence. 8th. Irritation of the sympathetic in its peripheral course, or of its cervical ganglion, causes dilatation of the pupil. 9th. Dilated pupils are a very characteristic symptom of impeded respiration from the action of carbonic acid upon the medulla. Contraction of the pupil shows that the highest degree of narcosis has been reached. 10th. The pupils are dilated in pressure upon the brain, in brain tumors with choked disk, in chronic hydrocephalus, in hæmorrhages within the cavity of the skull, and in simple distention of the cerebral vessels. 11th. Difference in the size of the normally movable pupils points to an irregular innervation of the sympathetic, due to an irritation either in its peripheral course or in the central connections in the brain and spinal cord. Mydriasis of one eye, with movable pupil, is a suspicious symptom, pointing to threatening brain disease, while, without a movable pupil, it has no special significance.

55. Rüter reports at great length a case of *tuberculosis of the iris* in a child, and then proceeds to discuss the whole subject of tuberculosis of the eye. The child was two years old, and the mother had noticed a gray spot in the pupil three weeks before Rüter saw him. An attempt was made to remove the mass, which filled the external half of the anterior chamber, by the ordinary operation of iridectomy. This, however, proved unsuccessful, and, as a granulating mass began to grow from the scleral wound, the eye was enucleated. Two months later the child had a violent attack of convulsions with left hemiplegia. A careful macroscopical and microscopical examination of the enucleated eye demonstrated a tuberculosis of the iris, which had begun in the form of nodules, and had gradually led to tubercular infiltration of the entire iris and also of the sclero-corneal wound. There were also found all the signs of cyclitis, anterior and posterior synechiæ and partial opacity of the lens. There was no demonstrable pathological change in any other part of the eye.

58. Guaita gives a very careful etiological and histological description of a so-called *cyst of the iris*, of spontaneous origin and obscure pathogenesis. The cyst was closed anteriorly by the corneal endothelium. These cysts might better be called cysts of the anterior chamber, since in reality the essential part of the cyst-wall was composed of the endothelium of the chamber, and of its basement membrane. The endothelium of the iris *only* was involved. The more probable view of the pathogenesis of these cases is that it is due to a congenital alteration. Probably the anterior surface of the pupillary membrane, and the posterior surface of the cornea, which at first are in contact, become in these cases adherent, so as to circumscribe a sort of cavity, limited behind by the pupillary membrane and iris, in front by the posterior surface of the cornea, and on the sides by the adhesions. In this pocket is contained the liquid arising from the degeneration of the endothelial cells, which, as time goes on, distends the cyst-wall, and the cyst grows larger.

59, 60. Giraud-Teulon's first paper is properly a report made to the Surgical Society of Paris upon a paper of Masse's upon *cysts of the iris*. The reporter concludes that, besides dermoid cysts, two sorts of cysts occur in the iris: the

one serous, translucent, with thin walls and transparent contents, and relatively of large size; the other appearing under the form of bead-like globules, like mother-of-pearl, smaller than the preceding, formed of concentric layers, veritable strata of epithelial or epidermal cells, mingled with fat globules and crystals of cholesterine. In the majority of cases the latter originate from a penetrating wound of the cornea. As to the former variety, the real serous cysts, they must be regarded as neoplasms growing by heterotopia; though there is a chance here for both methods of production, for the spontaneous production of a serous cyst formed at the expense of the zonular elements or of the connective tissue of the stroma of the iris, and for the formation of a cyst by the introduction of conjunctival elements. Here let it be remembered how often small corneal cicatrices escape observation, especially when situated in the limbus. — In his second paper Giraud-Teulon divides cysts of the iris into three classes, viz.: 1st, Cysts with an internal epithelial wall and serous contents; 2d, Dermoid cysts, sometimes containing fine hairs; 3d, White or pearly cysts, which, however, properly speaking, are not cysts but tumors of the structure of the pearly epithelioma. Iris cysts are generally of traumatic origin, and result from the introduction into the anterior chamber of a small quantity of conjunctival epithelium, which becomes attached to the iris, and gives rise to the tumor.

66. Knapp's conclusions as to *sclerotomy in glaucoma* are as follows: 1st. Sclerotomy is to be preferred to iridectomy in cases of simple chronic glaucoma with narrow field and deep excavation. 2d. Sclerotomy *only* should be done in cases of congenital buphthalmus. 3d. Sclerotomy should be preferred to iridectomy in glaucoma of young persons, and in cases of hæmorrhagic glaucoma. He also considers it legitimate to try sclerotomy in acute glaucoma.

73. In a somewhat brief paper on *hemeralopia in diseases of the liver*, Parinaud draws the following conclusions: 1st. Hemeralopia is by no means a rare complication in diseases of the liver. 2d. It appears ordinarily in attacks of varying duration. 3d. It appears in chronic affections, notably in cirrhosis, and develops after the liver has been affected for some time. 4th. It does not seem to be produced by icterus, but

by a special alteration of the blood resulting from interference with the hepatic functions. 5th. It is of grave significance.

77. Heyl's paper on *intra-ocular lipæmia* is interesting, though his conclusions must still be regarded as hypothetical. After a preliminary account of lipæmia as a physiological and as a pathological phenomenon, and of the two forms of lipæmia, he reports a case in which he was fortunate enough to be able to make a careful ophthalmoscopic examination. The patient was a man, aged twenty, in whom the chief ophthalmoscopic appearance was an abnormal color of the blood-vessels of the retina, the blood in both arteries and veins being of a light salmon color. The caliber of the vessels was also apparently increased, and the fundus appeared very light. He calls this intra-ocular lipæmia, and proceeds to differentiate it from intra-ocular leucæmia. In leucæmia the color of the fundus is an orange-yellow, while in lipæmia it is of a light salmon-red color. In leucæmia the veins are pale, of a bluish-red, while the arteries are of a pale yellow. In lipæmia arteries can scarcely be distinguished from veins, and both have nearly the same color as the fundus. In lipæmia the retinal vessels are apparently of about double the size of those of a normal eye, and this Heyl thinks is due to the presence of the molecular fat in the plasma of the blood, thus causing the full width of the vessel to appear. In leucæmia all agree that the veins appear unusually large and the arteries very narrow. [Heyl's explanation of the apparent size of the retinal vessels will not be accepted by all.] With regard to the pathological effect of intra-ocular lipæmia of the molecular form, as manifested in diabetes mellitus, Heyl calls attention to the fact that the extra-ocular complications in this disease are all characterized by necrosis of tissue. This necrosis of tissue is probably the result of interrupted circulation, and, Heyl thinks, may be caused by occluding masses of fat. He concludes that there is a strong presumption in favor of fatty obstructing masses in the intra-ocular blood-vessels as a cause of diabetic cataract, provided, as he says, there exists reasonable ground for supposing that such a cause would produce cataract at all.

78. Bresgen reports a case of *diabetic amblyopia* without any ophthalmoscopic

sign. The characteristic symptom was the appearance of a pericentric scotoma, within the limits of which the form-sense or perception was at first diminished, with, at the same time, partial diminution of the color-sense, which afterward became total, and, finally, diminution of the light-perception, while the peripheral parts of the retina performed their normal functions unimpaired. The case resembled the ordinary cases of alcoholic and tobacco amblyopia, at least from a pathological standpoint.

84. Hughlings-Jackson's paper upon *optic neuritis in intra-cranial disease* is very long, and of exceptional interest. The frequent putting of questions for the purpose of eliciting subsequent discussion makes it almost impossible to give a fair idea of its scope in an abstract. He thinks there is but one kind of optic neuritis from intra-cranial disease. Considering it ophthalmoscopically, the most trustworthy localizing symptoms helping the diagnosis of tumor are such as convulsions beginning unilaterally, and paralyzes of cranial nerves. He doubts whether he has ever seen double optic neuritis from clot, though he has seen the two coincidentally. In tubercular meningitis he believes that swelling of the disk comes on at a time when the diagnosis of meningitis is made from other evidence; it is slight, even, and merges into the fundus, like the earliest stage of optic neuritis from intra-cranial tumor. But he also admits the clinical difficulty, that intra-cranial tumor sometimes produces an acute illness, not distinguishable by its symptoms from meningitis, tubercular or traumatic. He does not recognize any difference in the kind of disk between cases in which sight is good and those in which it is defective or lost, but only a difference in the *stage* of changes. He recognizes the difficulty of determining whether a patient has *had* neuritis from the appearance of the disks at a later period, especially if the patient has never been seen before. He calls attention to the fact that, in some cases of atrophy from neuritis, the pupils do not contract under the stimulus of light, while they do during the act of accommodation. When the author comes to speak of clinical facts, he expresses his conviction that the diagnostic value of optic neuritis is not dependent upon whether the sight be good or

lost. He thinks that there is nearly always a stage of neuritis before sight fails, though he admits that sometimes vision is affected before there is any ophthalmoscopic evidence of neuritis. In regard to the association of optic neuritis with other symptoms, he classes neuritis, headache, and vomiting in one group. The three symptoms depend in very many cases on local gross organic disease within the cranium, but are no further localizing; they do not help us to determine in what particular part within the cranium the inferred disease is. It is, however, important to bear in mind that optic neuritis may occur without any headache and without vomiting, or that there may be slight headache and no vomiting. The author is sure that facts show that even complete recovery with good sight does not negative persisting local gross organic disease within the cranium; and this is especially true of some cases of syphilitic tumor. The fourth section of the paper treats of the diagnostic and non-diagnostic value of optic neuritis. Although so often found with disease of the cerebrum or cerebellum, it does not occur from mere destruction of any particular part of the encephalon. Optic neuritis mostly occurs with intra-cranial tumor or some other adventitious product. The mass may be in any part of the encephalon, with the possible exception of the medulla oblongata, and may produce double optic neuritis. But, on the other hand, optic neuritis may *not* be found with tumors or other masses in different parts of the cranial cavity. Then, again, it may appear late and pass off, the patient dying ultimately of tumor. It occurs exceedingly rarely in cases of extensive destruction of brain substance by softening or clot. Because, therefore, optic neuritis occurs with tumor of any part, and may not occur with tumors of many parts; because it comes on late in some cases of tumor, and passes off again in some; and because it is very rarely found with such widely destructive processes as softening and clot; and because it may not be attended by any defect of sight—it is inferred that it does not depend on destruction of any part of the nervous centers. From this our author concludes that tumor or any other adventitious product does not produce optic neuritis in its particular character as this or that kind of pathological product, but in its general char-

acter as a "foreign body"; and then not because it destroys, but by some indirect action. He then discusses the various hypotheses as to the mode of production of changes in the optic disks by intra-cranial adventitious products, and gives the arguments for and against them. The hypothesis which seems to him most plausible, when the whole of the non-localizing symptoms are taken into account, is that optic neuritis results doubly indirectly from intra-cranial tumor by vaso-motor action. At first there are changes of instability about the tumor; next, these promote discharges, by the intermediation of vaso-motor nerves, to repeated contractions, with subsequent paralysis of vessels of the optic nerves or centers, and thus at length lead to that trouble of nutrition which is optic neuritis. He supposes that all the symptoms alluded to are signs, not directly of tumor, but of an encephalitis provoked by the tumor in its character as a foreign body. He admits that swelling of but one disk is a difficulty in the way of this hypothesis being accepted as perfectly satisfactory.

85. In a short paper on *optic neuritis due to intra-cranial neoplasms*, Abadie thinks that, if the patient be a child or a young adult, the presumption is in favor of the neoplasm being isolated tubercles; but, if the patient is an older adult, the tumor is probably of a fatally progressive nature. In both classes of cases the prognosis is positively bad, both as to vision and as to life. With syphilis as the probable cause, the prognosis is more favorable. But there are some cases in which the neoplasm causes blindness without death. These patients are generally young, with no suspicion of syphilis or tubercle attached to them, but with all the symptoms of some grave intra-cranial disorder. These cases, Abadie thinks, are not followed out for a sufficiently long period, for many of these patients recover with blindness, the neuritis having passed into atrophy of the optic nerves. Abadie thinks the lesion here is often a periorbitis of the bones of the skull, of a circumscribed nature, which runs its course with grave symptoms, but subsides, the exudation is absorbed, and the patients' health is entirely restored, but with complete blindness.

86. In Galezowski's paper on *optic neuritis in reference to intra-cranial*

inflammation or tumor, he considers the affection as nothing more than the consequence of progressive, descending inflammation, proceeding from the center toward the periphery; the same in nature as, but much more rapid than, the gray degeneration in locomotor ataxy. This alteration may follow the course of the optic tracts without involving any nerve of sense or motion if the intra-cranial tumor at its origin and point of implantation is at a distance from these nerves; for the degenerative process follows but one direction and one course, namely, that of the optic-nerve fibers. A meningitis situated at the base of the brain, near the chiasm, may set up an inflammation in the substance proper of the chiasm, which, little by little, will extend to the optic papilla. On the contrary, a meningitis occupying the cerebral hemispheres might run through all these phases, and even end fatally, without there being any apparent change demonstrable in the optic papilla.

93. In his paper on *the duration of the act of accommodation of the lens*, Angelucci comes to the following conclusion, based upon careful investigations and mathematical measurements of his own: The difference in time which elapses between accommodation for the near point and that for the far point is not in accord with the duration of the emigration of the luminous image upon the lens, for the lens changes its radius of curvature with the same rapidity in both accommodative acts; but, instead, with the muscular force, which does not induce at once that degree of sphericity of the lens demanded for the dioptric conditions.

96. Döench endeavors to account for *congenital dislocation of the lens*. He finds that it always affects both eyes, generally in a symmetrical manner. The direction of the displacement is almost always either upward, upward and inward, or upward and outward. The lenses are generally transparent; sometimes their size is below the mean. The suspensory ligament is sometimes found, sometimes not. In about one fourth of all the cases there is myopia. The position of the lenses may remain unchanged throughout life, but spontaneous dislocation may also result. Heredity has been proved in some of the cases.

102. Watson advises *opening the capsule before making the corneal section*

in the operation for cataract. The advantages of this preliminary step he thinks are four, viz.: 1. The dilated pupil allows of the free and visible movements of the cystitome. 2. The margin of the pupil is less liable to injury than in the old method. 3. The relative bulks of the nucleus and cortex can be ascertained before making the corneal section. 4. The operation is thus rendered easier and safer. [This is questionable.]

103. Pagenstecher's paper upon the *extraction of cataract with the capsule* is an admirable discussion of an important and very interesting branch of ophthalmic surgery. He thinks the difficulties of introducing the flat, shallow spoon for the removal of lens and capsule, and the dangers arising from prolapse of the vitreous, have been greatly overestimated. The advantages he claims for this method are as follows: 1st. The gain of a perfectly clear pupil. 2d. The absence of plastic and recurrent iritis. 3d. There is no danger of any diminution of the resulting vision through clouding of the capsule, and consequently no necessity for any secondary operation. 4th. The very best degree of visual acuity. 5th. Recurrent hæmorrhages are much rarer than when the capsule is left behind. 6th. The dazzling sensations due to diffusion of light through the capsule are done away with. 7th. There is no prolapse and cicatrization of the capsule in the wound. The disadvantages which he enumerates are as follows: 1st. The healing of the wound is in some cases somewhat slower than by the other methods. 2d. Vitreous opacities are more frequent. 3d. The average resulting astigmatism is somewhat greater than after extraction without the capsule.

104. Fort's paper upon *the latest improvements in the operation for cataract* consists really in describing the operation as it is done in Paris. A modified Listerism is carefully carried out in all cases, the antiseptic fluid used being generally phenic acid. The incision employed is the superior keratotomy, and, as a rule, an anæsthetic is not employed. As soon as the lens has been extruded, the blepharostat is removed and a solution of eserine is instilled. Fort lays great stress upon what he calls the *toilette* of the anterior chamber, which consists in carefully and patiently removing the extravasated blood, the

crumbs of soft cortical matter, and bits of pigment from the anterior chamber and lips of the wound, and smoothing the cut edges of the coloboma of the iris into place. When an attempt is to be made to remove lens and capsule together, the patient is anesthetized and superior keratotomy is done. After the iridectomy, the teeth of a pair of forceps are introduced through the wound, and the capsule and zonule are seized and drawn out to the wound. If traction fails, a curette is to be introduced behind the lens, even into the vitreous, and the lens extracted.

105. Webster reports eleven cases of *sympathetic inflammation following operations for cataract*. In four cases both eyes were lost. In one case the eye causing the sympathetic inflammation was lost, and the other eye was badly damaged. In one case the eye causing the sympathetic inflammation was lost, while the other eye recovered in good condition. In one case the eye causing the sympathetic inflammation recovered with perception of light, while the other recovered with slight damage. In one case the eye causing the sympathetic inflammation retained useful sight, while the eye sympathetically inflamed gave promise of recovery. In two cases both eyes recovered in good condition. In one case the eye sympathetically inflamed was lost, while the eye causing the sympathetic inflammation retained good vision.

121. McHardy's article on the practical employment of the *electro-magnet in aiding in the detection and removal of particles of iron and steel within the eye* contains some good practical suggestions. Among others, he speaks of the pain experienced by some patients when the injured eye is brought well within the range of the pole of the magnet. This pain he regards as a proof of the completion or interruption of the galvanic current which induced the magnetic action, and therefore as furnishing conclusive evidence not only of the lodgment of a particle of iron or steel, but also that the magnet is exercising a sensible traction thereon. This pain-test he regards as important, as demonstrating the presence of a foreign body, of iron or steel, within the eye.

123. Noyes reports a case of *buphthalmus, with central anterior synechia, cured by total removal of the iris*. An incision was made, about 4 mm. long, with the point of a Graefe's knife thrust

at a tangent into the vicinity of the origin of the iris. A small, sharp hook was then pressed between the iris and the cornea flatwise, and pushed across until the iris on the far side of the chamber, near its periphery, could be entangled in its point. It was rotated upon itself so as to secure a good bite of the iris, and traction was then made to loosen the peripheral margin. It yielded easily, and about half the iris was thus torn away. The remaining iris was then withdrawn with forceps. Very moderate bleeding occurred. On the fourteenth day the eye was healed, the staphyloma was much reduced, and the patient was discharged. Three months later the eyeball was found of less than normal size, but not soft.

126. Luchman found *disease of the eye in relapsing fever* in six cases out of one hundred and eighty, or three and one third per cent. In three of these cases the complication was iritis of one eye, and in one of these cases a large hypopyum. All three cases were cured, but in one there remained a punctate vitreous opacity, which produced misty vision. In two other cases there was optic neuritis. The sixth case was iritis with hypopyum, which was cured, but with a second relapse of the fever appeared also a bilateral irido-cyclitis, which turned out badly, with permanently impaired vision.

129. Rampoldi, in his paper upon the *connection between disease of the digestive organs and disease of the eye*, devotes special attention to diseases of the stomach accompanied by hæmorrhages. Various pathological changes occur in the eye after gastric hæmorrhage. These changes should be sought in an irritated condition of the optic nerve, which follows closely upon the hæmatemesis, whatever may be the tie which connects the two affections so intimately as to make us doubt its being pure coincidence. The prognosis is in the majority of cases very grave, even more so than in the cases of amblyopia caused by profuse metrorrhagia, without our being able to say why it is so. The obscure pathogenesis and the strangeness of the affection make these cases of great interest.

135. Pagenstecher has a long article upon the employment of *massage in diseases of the eye*. The manner in which he makes use of this method is as follows: By means of the thumb or index-finger he makes pressure upon the edge

of the lid and rubs the latter rapidly against the eyeball in both a radiating and a circular direction, the former being regarded as the more important. The influence exerted is upon the conjunctival circulation and indirectly upon the intra-ocular circulation. He employs massage in chronic pustular conjunctivitis, especially in old people and in the hypertrophic form; in scleritis and episcleritis; in diseases of the ciliary body in which the pain is not very marked. He regards it as a very valuable adjunct to ophthalmic therapeutics.

136. Niden advocates the employment of *electrolysis in the treatment of certain tumors of the eye and its appendages*. The advantages are: 1. Its applicability for the removal of neoplasms where other means fail or are of too uncertain and dangerous a nature. 2. Cavernous, angiomatic, and teleangiectatic tumors may be destroyed without entailing a loss of substance of the normal coverings. 3. The effect to be attained may be accurately determined by the number of needles introduced, the number of cells used, the duration of the application, and the strength of the electric current. 4. There is scarcely any loss of blood, and the pain is very moderate. 5. The application is easily learned, and quite free from danger. Niden does not believe in the efficacy of electrolysis in the treatment of corneal or vitreous opacities, iritic membranes, or cataract.

137. Saltini has employed the *bisulphate of quinine in idiopathic hemeralopia* with success. The patients were sixteen in number, fifteen males and one female, the symptom having lasted from twenty to forty days. Five of these patients were very poor and in bad health, and two decidedly marasmic; the others were all in robust health. In five cases there was extensive atrophy of the choroidal pigment, in four cases slight circumpapillary opalescence of the retina, and in one case only a whitish papilla with very small arteries. In the other cases the fundus was normal. To all of these sixteen patients Guaita gave one gramme of the bisulphate of quinine in twenty-four hours, and afterward forty to fifty centigrammes of the salicylate of sodium to each dose of quinine. Six of the patients never returned after the first visit. Of the remaining ten cases, complete recovery occurred in four and very marked improvement

in six cases. The number of cases is, however, too small to draw conclusions from.

139. In making their experimental researches into the physiological action of *mydriatics and myotics*, Fitz G6rald and Laborde employed hypodermically morphine, salicylate of eserine, hydrochlorate of pilocarpine (the latter also locally in the eye), nitrate of aconitine locally and hypodermically, and atropine locally and hypodermically. Their general conclusions are as follows: 1st. The effects of substances which act upon the iris, producing either a contraction or a dilatation of the pupil, differ essentially according as the substances are introduced by physiological absorption or by local application. 2d. Among the substances classed as myotics, some, like morphine and eserine, produce this contraction by an actual influence upon the oculo-motorius, and by a functional irritation, either of its conducting fibers or of the cells in the nucleus of origin. 3d. Others, as pilocarpine, seem to exercise a simultaneous paralyzing action upon the sympathetic and the third pair, so as to permit of an ultimate predominance of the sphincter of the pupil. 4th. The functional action of the ophthalmic branch of the fifth pair seems to play an active part in the production, by mechanical reflex, of myosis or of mydriasis, after the local application of substances which excite the one or the other of these effects. 5th. The mydriatic action of atropine seems to be the effect of a functional paralysis of the third pair. 6th. The peripheral or local action of these various substances is exerted directly upon the contractile property of the unstriated fibers of the muscle of the iris, and perhaps simultaneously upon the ganglionic cells of the iris tissue.

140. Sch6fer's paper upon *the comparative value and activity of atropine, duboisine, and homatropine in ophthalmic therapeutics* is exhaustive. He finds that atropine dilates the pupil more slowly than duboisine, but its effect lasts longer. Homatropine dilates the pupil more quickly than either of the two other drugs, but the dilatation is less and its duration is shorter. The strength of the solution of homatropine exerts no apparent influence upon the duration of its effect. The accommodation is most quickly paralyzed by duboisine, and next by homatropine; but the effect of the latter lasts only about

twenty-four hours, while that of duboisine lasts three or four days. The paralysis of accommodation from atropine is more gradual in its onset, and lasts the longest. Homatropine is to be preferred for simple dilatation of the pupil, or for paralyzing the accommodation preparatory to determining the refraction; but as a therapeutic agent it is inferior to both duboisine and atropine. Schäfer found it possible to break adhesions with duboisine which had resisted the action of atropine. No conjunctival irritation was produced by either duboisine or homatropine.

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2. Baber, in a short article upon the use of the *tuning-fork in the diagnosis of diseases of the ear*, refers to the effect of pressure exerted on the ear on the perception of the tuning-fork vibrations. On applying a sounding tuning-fork to the median line of the head, if one meatus be closed, the sound of the fork, which, on closing the ear lightly, is heard loudly in the obstructed ear, if the finger be pressed inward, diminishes in the closed ear with the amount of pressure exerted, until the sound is heard only slightly, or not at all louder in the closed than in the unclosed ear. The same takes place with the voice if any note be continuously hummed. In this experiment, the air in the meatus, becoming condensed, doubtless forces the membrana tympani inward and with it the ossicles. This phenomenon, Baber thinks, admits of two interpretations: 1, It may be considered due to the inward pressure of the ossicles, causing slight pressure on the labyrinthine fluid, by which the functions of the labyrinth are temporarily interfered with; or, 2, It may be attributed to the impediment to the vibrations of the ossicles, produced by their altered tension. The fact of the sound-waves—which are reflected from the obstruction in the meatus—having to pass through a tympanic apparatus of which the tension is abnormal probably weakens their effect on the labyrinth.

3. Gruber's paper upon *diminishing and increasing the air in the external auditory canal as a means of treatment in diseases of the ear* is very interesting.

The hyperæmia in the canal, artificially produced by exhausting the air in the canal, can only be produced by the blood being drawn from the vessels of the deeper structures of the ear, and thus the latter are depleted. This motion in the blood current is propagated to the labyrinth, and even to the cavity of the skull. Moreover, this increased or diminished atmospheric pressure exerts the most varying influence upon the motility of the drum membrane and upon that of the ossicles. Hence, anomalies of the drum membrane, pathological changes in the ossicles and their joints, in the Eustachian tubes and the mastoid cells, will all modify the effect of changes in the atmospheric pressure in the external auditory canal. In many cases, Gruber thinks, the air-douche through the Eustachian tubes might with advantage be replaced by increasing or diminishing the atmospheric pressure in the external auditory canal. In most of the cases where inflation of the Eustachian tubes is indicated it should be aided by this withdrawal or increase of the air-pressure in the external auditory canal, as improvement in the hearing is often thereby produced.

4. In a paper upon the value of *pain as a symptom of ear disease*, Field calls attention to the fact that pain which has its origin in the ear is by no means localized in that organ; it may be either in front of, above, behind, or below it, indeed, anywhere on the same side of the head, and, perhaps, on both sides. The external, middle, and internal ear have all very far-reaching nerve con-

nections. In front of and above the external ear are ramifications of the auriculo-temporal branch of the third division of the fifth; behind, above, and below are the small occipital and great auricular branches of the cervical plexus. Immediately behind the pinna the auricular branch of the pneumogastric comes to the surface and gives rise to very important communications. All these nerves anastomose in and around the pinna. In the tympanic cavity we find an equally wide-reaching plexus: the tympanic branch from the petrous ganglion of the glosso-pharyngeal communicates with the great superficial petrosal, which passes to the sphenopalatine ganglion, its small superficial petrosal twig goes to the otic ganglion, and a third filament passes to the carotid plexus of the sympathetic. All these nerves are united in the tympanic plexus, and pain produced in the tympanum may radiate over the wide area which they occupy.

5. In their paper upon *the vaso-dilating nerve fibers of the ear*, Dastre and Morat have analyzed Snellen's reflex as follows: 1, The centripetal path which conducts the irritation to the cervical cord consists of the second pair of spinal nerves, the origin of the auriculo-temporal; 2, Experiments prove that irritation in the cord follows a descending course, to pass out below the seventh cervical nerve; 3, The irritation makes its exit from the cord by communicating branches which go to the first thoracic and the inferior cervical ganglia. These communicating branches are the true auricular vaso-dilating fibers, and that portion of the cervical division of the cord which transmits the irritation to them constitutes for the ear a vaso-dilating center. The auricular dilators and constrictors have different origins in the cord, though they are adjacent. There is a cervical vaso-dilating center, and below it a thoracic vaso-constricting center. Both belong to the system of the great sympathetic.

9. In Gruber's article upon *cartilaginous and osseous neoplasms in the ear* he coincides with the views of Delstanché and Hedinger that the so-called exostoses are in part pure osteomata, in part osteoid structures, due to a hyperplasia consequent upon inflammation. Cartilaginous neoplasms he regards as the rarest of all new formations in the ear. He reports three cases, and a

microscopic examination of one of the growths proved it to be an ossified chondroma.

15. Raynaud's paper on *diabetic otitis* is illustrated by one marked case, in which he was fortunate enough to obtain an autopsy. The otitis was of the ordinary form of acute inflammatory otitis hæmorrhagica, marked by great pain and a profuse discharge, which at first was bloody and subsequently became serous, but never became purulent. There was a small perforation in the membrana tympani, and the membrane itself was covered by a whitish exudation, pseudo-membranous in character. The mucous membrane of the tympanum was red, bleeding, and granulating, and the tympanic cavity contained a reddish, puriform fluid. The ossicles were in place, and a small blood clot was found near the stapes. The mastoid cells were filled with a reddish liquid containing pus cells, and their lining mucous membrane was red and softened. The osseous substance was injected and inflamed, but the vestibule, cochlea, and semicircular canals showed no alteration. This osteitis of the petrous and mastoid portions of the temporal bone was no doubt due to the diabetes, bony lesions being by no means rare in this disease.

17. Gottstein calls attention to the frequent occurrence of *diseases of the ear in the course of acute exanthemata* and all acute infectious diseases. He cites in particular three cases in detail. One was acute inflammation of the middle ear with perforation, occurring in the course of measles, and resulting in a cure. Another was croupous inflammation of the velum, pharynx, nose, and both tympanic cavities in the second week of scarlatina, with otorrhœa, and ending in a cure. A third was a case of diphtheria of the throat with diphtheritic otitis of the left side, coming on in the second week of measles, and also ending in a cure. Hence he insists upon the necessity of examining the ears at an early period in all these diseases, in order to institute proper treatment at once, and prevent disastrous results.

18. Luchhan found *disease of the middle ear in relapsing fever* in fifteen out of one hundred and eight cases, or eight per cent. However, the aural complication does not result from direct extension of the disease from the pharynx, for usually the throat and

Eustachian tube are intact. In only one of his fifteen cases was there any pharyngeal catarrh. The prognosis is favorable, provided proper treatment has been begun early enough in the course of the disease; for, if there has been perforation of the drum membrane and suppuration for a considerable period, there is but little chance of restoration of perfect hearing. If no suppuration has occurred, Luehau recommends local abstraction of blood, and morphia for the pain. If suppuration is evidently present, paracentesis of the drum membrane must be performed at once. The after-treatment consists in washing out the cavity with a warm one-per-cent. solution of carbolic acid, and inflation of the Eustachian tube and drum cavity.

19. Gruber discusses the *advantages of dividing the posterior fold of the membrana tympani*. When this fold has become thickened and immovable, the hammer is impeded in its physiological movements, and indirectly the other ossicula also. From this result many secondary changes in other parts of the ear, such as subjective noises, attacks of vertigo, etc. Gruber has done the operation upon the drum membrane recommended by Lucae, and has found that it is of value only in exceptional cases. It is only in those rare cases in which the folds run directly backward that the vertical division of the folds is of any value. The same may be said of the vertical division in the center of the fold, recommended by Politzer. The vertical division of the fold in the drumhead is useful in acute and chronic processes in the middle ear, where the leaves of the fold have not undergone any further pathological change. Where the fold runs in a curve over the posterior segment of the drumhead, and where any of the above-mentioned pathological changes have occurred, nothing can be expected from a simple vertical division. Here the incision must run in the longitudinal axis of the fold, either through the axis, or through the fold, parallel with the axis.

32. Steinbrügge reports an extremely interesting case of a *chronic suppurative disease of the middle ear with sudden mastoid complication*, in which the mastoid was trephined, and the patient subsequently died of *miliary tuberculosis*. At the autopsy there was found tubercular basilar meningitis, caries of

the left temporal bone; cheesy degeneration of the lymphatic glands; and miliary tuberculosis of the lungs, spleen, liver, kidneys, and serous membranes. Of the organs of special sense, the eye was most affected, probably by a transmission of inflammatory processes within the sheaths of the optic nerves. The dilatation of the pupils before disturbance of vision set in and the irregularity in their size at a later stage are not common symptoms, and are difficult of explanation. A direct transmission of the morbid process to the brain could not be discovered in any part of the pyramid or of the dura mater in its vicinity. It is impossible to say whether the whole condition of the middle-ear affection was not caused by a tuberculous diathesis, to which there was a distinct family tendency. If it had been possible to make any early diagnosis of basilar meningitis, independent of the disease in the temporal bone, the operation would not have been undertaken.

26. Poineroy reports an interesting case of *intra-cranial tumor* in a child, with the results of the autopsy. The early development of the tumor was from the neighborhood of the *tympanum*, as the first symptom of the disease was paralysis of the sixth nerve, then of the third, and soon afterward of the facial. As the paralysis of certain muscles of deglutition did not occur until some time after that of the facial muscles, it was inferred that the anterior portion of the facial, in the hiatus Fallopii, was invaded by the tumor somewhat later. The growth was beneath the dura mater, and filled the left middle cranial fossa and a portion of the anterior and posterior fossæ. The surface of the growth was nodular, and one of its pedunculated projections passed under the left anterior clinoid process, displacing the nerves and vessels in this region. There was a large brain-like growth situated in the region of the left ear, measuring four inches across the base and five inches in the vertical direction. It did not project through the external auditory canal, but through the point of attachment of the pinna to the head, in front and behind. On microscopical examination it proved to be myxo-sarcomatous.

27. Baratoux's paper on *changes in the ear in deafmutism* is interesting. In cases of this sort hitherto examined anatomically, there have been found

anomalies of the labyrinth, such as partial and even total absence of the semicircular canals, but no lesion of the cochlea has been described. Baratoux furnishes the report of a case in which there was partial defect of the organ of Corti, though there was no change in the semicircular canals. The vessels of the cochlea were found very much enlarged and their walls thickened. The canaliculi of the osseous lamina were dilated and the lamina diminished in thickness. But few nerve fasciculi existed here, and these were without a medulla sheath. No cells of the plexus of Rosenthal were visible. The spiral angle was very vascular, and contained enormous lacunæ and numerous vessels with hypertrophied walls. The holes in the perforated zone no longer existed except in a few spots. There was not a trace of the elements of Corti. The auditory nerve was atrophied and surrounded by thickened connective tissue. There was no axis cylinder in any of the fibers, but their sheath was thickened and their nuclei were hypertrophied. In other words, the case was one of parenchymatous neuritis with absence of the organ of Corti.

29. Schwartze reports a very interesting case of *punctured wound of the middle ear, with escape of cerebro-spinal fluid*, accompanied by severe symptoms of cerebral irritation induced by cerebral hyperæmia. The wound was produced by a knitting-needle, which lacerated the drum membrane in the

region of the stapes. The watch was not heard at all, when held either against the ear or on the mastoid. All notes of a tuning-fork were heard best in the injured ear, no matter from what part of the skull they started. The flow of cerebro-spinal fluid was very profuse, and lasted eight days. The patient finally recovered in about five weeks, with complete deafness on the injured side.

31. Zaufal recommends *disinfection of the air or vapor used for inflating the Eustachian tubes and middle ears*. He does this by means of a disinfecting capsule which contains a ball of cotton-wool, or, better, the material used for Lister's bandages. This retains what particles of dust or spores may be floating in the atmosphere, and prevents their introduction into the tympanic cavity during inflation.

32. Knapp speaks highly of *the cotton pellet as an artificial drumhead*. He claims for it the following advantages: 1. Moistened with glycerine and water, these pellets are a great aid to hearing in many cases of partial or total defect of the drumhead, with or without otorrhœa. 2. Their therapeutical action in arresting profuse discharge, and at the same time preventing the mucous membrane of the drum cavity from drying up, is most valuable. 3. They protect the deeper parts of the ear against injurious influences of the atmosphere. In some cases they may be worn for a lifetime with permanent comfort and benefit.

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